

**Notice of Allowability**

Application No.

09/910,630

Applicant(s)

HUFFMAN, WILLIAM A.

Examiner

Pierre-Michel Bataille

Art Unit

2186

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 01/04/2005.
2. ☒ The allowed claim(s) is/are 1-20.
3. ☒ The drawings filed on 05 November 2001 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material .
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

## DETAILED ACTION

### *Allowable Subject Matter*

1. Claims 1-20 are allowed.
2. The following is an examiner's statement of reasons for allowance: the present invention features: a plurality of processor nodes; a memory, wherein the memory includes a plurality of lines and a cache coherence directory structure, wherein the plurality of lines includes a first line and wherein the cache coherence directory structure includes a plurality of directory structure entries; and an interconnect network connecting the plurality of processor nodes to the memory.

#### Closed related art:

Kaplow et al, "Run-Time Reference Clustering for Cache performance Optimization", IEEE Proceeding on Parallel Algorithms, March 1997.

Sterling et al., "Gilgamesh: A Multithreaded Processor-In-Memory Architecture for Petaflops Computing", <http://sc-2002.org/paperpdfs/pap.pap105.pdf>.

US 5,596,704 (Geddes) suggests process models including processing nodes and process streams where a processor utilizes the process model to determine coordinates for each node and to determine the routing coordinates for each process stream for display and the coordinates defining a matrix with matrix rows and matrix columns, with each of the plurality of nodes associated with an associated matrix row and each of the plurality of nodes associated with an

associated matrix column.

US 5,367,692 (Edelman) suggests a processing element array comprising a plurality of processing element nodes the form of an "n"-dimensional hypercube, the dimensionality of the hypercube and the number of processing element nodes being related, with the relation being that the number of dimensions corresponds to the logarithm, to the base two, of the number of processing element nodes in the hypercube.

However, none of the prior art of record suggests or, in combination, renders obvious, as recited in the claims:

n bit vectors defining a matrix having a number of locations equal to the product of the number of bits in each of the n bit vectors, wherein the number of locations being at least equal to the number of processor nodes and wherein each of the processor nodes is mapped to a corresponding one of the locations wherein the locations corresponding to the processor nodes are dispersed in the matrix in an at least partially noncontiguous manner.

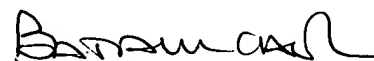
Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Conclusion***

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pierre-Michel Bataille whose telephone number is (571) 272-4178. The examiner can normally be reached on Mon-Fri (9:30A to 6:00P).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew M. Kim can be reached on (571) 272-4182. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Pierre-Michel Bataille  
Primary Examiner  
Art Unit 2186

February 9, 2005

**PIERRE BATAILLE  
PRIMARY EXAMINER**